

CLAIMS

1. A motor drive unit for driving a sensorless motor having a multiplicity of stator coils and a drive switching circuit for supplying drive current to said stator coils, said motor drive unit adapted to control the drive switching circuit by a drive signal, said drive unit comprising:

a sequence circuit for providing said drive switching circuit with a rotor-position detecting signal for controlling said drive switching circuit such that, prior to starting up said sensorless motor, said multiple stator coils are supplied with rotor position detecting drive voltages that vary the middle point voltage of the respective stator coils but will not rotate said sensorless motor; and

a matching-pattern detection circuit adapted to compare said middle point voltage of said multiple stator coils obtained under said applied rotor-position detection drive voltages with the detection reference voltage established on the basis of said rotor-position detection drive voltages, and determine whether or not the result of said comparison matches any one of predetermined detection logic patterns, wherein

when they do match in said comparison, said motor drive unit generates a startup logic in accord with the rotor position specified by the matching detection logic pattern, but

when they do not match in said comparison, said motor drive unit varies the detection reference voltage and causes said sequence circuit to generate a further rotor-position detecting signal to repeat detection of said rotor position.

2. The motor drive unit in accordance with claim 1, wherein said rotor position detecting voltages are generated so as to create in sequence two states such that, in one state, a stator coil of one arbitrary phase is switched on and off to have a low potential when it is switched on while other stator coils of other phases have a high potential, and, in another state, a stator coil of another arbitrary phase is switched on and off to have a high potential when it is switched on while other stator coils of other phases have a low potential, said sequence repeated allowing one arbitrary phase shifting from one stator coil to another.

3. The motor drive unit in accordance with claim 1, wherein said predetermined detection logic patterns multiply include different detection logic patterns for a given rotor position.

4. The motor drive unit in accordance with any one of claims 1-3, wherein said matching-pattern detection circuit has a detection-level generation circuit for adding to a variable offset voltage a virtually neutral point voltage that is formed based on the rotor position detecting drive voltages supplied to said multiple stator coils, to thereby obtain said detection reference voltage.

5. The motor drive unit in accordance with claim 4, wherein said virtually neutral point voltage is formed by a resistor circuit consisting of a multiplicity of resistors each having one end coupled to the rotor position

detection drive voltage the other end connected to a common node.

6. The motor drive unit in accordance with claim 4, wherein said offset voltage is switchable in level and/or polarity by an offset switching signal.

7. The motor drive unit in accordance with claim 1, wherein said matching-pattern detection circuit includes:

- a comparator for comparing said middle point voltage with said detection reference voltage;

- a register for storing as detected patterns results of said comparison received in sequence from said comparator; and

- a decoder for comparing said detection patterns stored in said register with said predetermined detection logic patterns and for outputting either said startup logic or a mode selection signal instructing detection of the position of said rotor or driving of said motor, in accordance with the result of the comparison.

8. An electric apparatus, comprising:

- a sensorless motor;

- a motor drive unit for driving said sensorless motor in accordance with any one of claims 1-7.